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An Evaluation of the Expanded Food And Nutrition Education Program: An Ohio Case Study

Ted L. Napier and Carol Wharton

Department of Agricultural Economics and Rural Sociology
The Ohio Agricultural Research and Development Center
and The Ohio State University
Columbus, Ohio

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Introduction

The socio-economic conditions of the American underclass has received significant attention in recent years due to the mass of people who are considered economically deprived. Using an economic definition of "poverty" one is impressed with the statistics which show that perhaps as many as 36 million Americans could be classified as severely underpriviledged. Even conservative estimates of the number of people which would be classified as poverty stricken indicate that approximately 16 million people are economically poor. Regardless of which figure one uses, the magnitude of the social problem should be self-evident.

While the magnitude and severity of the problems of the poor are recognizable, solutions are not easily achieved. Attempts at the resolution of the problems of the poor have ranged from federal subsidies in the form of commodity products being made available to the poor (Direct Distribution Program) to recent consideration of guaranteed annual income. The criticisms directed toward other programs such as welfare programs should give ample evidence of less than overwhelming success of these attempts.

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[1]Ted L. Napier is an Assistant Professor in the Department of Agricultural Economics and Rural Sociology, The Ohio Agricultural Research and Development Center and The Ohio State University. Carol Wharton was a research assistant in the Department of Agricultural Economics and Rural Sociology. The Ohio Agricultural Research and Development Center and The Ohio State University and is now employed by the School of Home Economics at The Ohio State University.

While the attempts to resolve the economic difficulties of poor Americans have been numerous, the socio-economic conditions are often times not being resolved. Lack of social and economic opportunity still persists among the lower classes, blocked avenues of achievement are still evident, and many other impediments for the poor are recognizable.

The task of resolving social problems of poverty is complex but there are interesting, innovative programs being developed and implemented. This article will attempt to analyze one attempt to resolve the nutritional needs of low-income people, specifically the Expanded Food and Nutrition Education Program of the Cooperative Extension Service.

The Evaluation of the Expanded Food and Nutrition Educational Program

Institutional efforts have been underway to provide poor people with food from at least the early 1930's and probably long before. It was during the mid-1930's that the Direct Distribution Program (DDP) for the distribution of surplus commodity products among the low income families came into being. The major difficulty with this program for resolving the hunger needs of the poor was that priority was given to removing surplus farm products from the trade market rather than feeding the hungry in our society. The DDP's effectiveness was somewhat hampered since the type, quantity, and quality of foodstuffs secured by the needy were determined by the price-support system rather than the needs of people. The diets of the DDP food recipients remained inadequate.

The next attempt by the USDA was the Food Stamp Program which began in 1961. The Food Stamp Program improved upon the DDP since the client could purchase what he needed in a manner similar to other consumers.

The recipient of food stamps purchases the stamps on a graduated scale depending upon his income and liabilities and then uses the food stamps to purchase foodstuffs in local food outlets.

While both of these programs have made contribution in the elevation of foodstuff intake of the lower class, they had one basic fault. The assumption was made that recipients possessed knowledge for the effective utilization of the additional resource base and the only thing lacking was finances. This assumption proved to be invalid. The Citizen's Board of Inquiry in 1968 noted that recipients often times did not have sufficient knowledge in terms of preparation of foods, budgeting, selection of foods, planning, and so forth.

The Cooperative Extension Service initiated the Expanded Food and Nutrition Education Program (EFNEP) in 1968 to correct the problem of insufficient information relative to the various above mentioned factors. In essence, communication of certain skills to underpriviledged homemakers is the primary objective of the program.

Aides are employed and trained by the Cooperative Extension Service to visit low-income homemakers and provide information and training relative to foods and nutrition so that limited resources may be most effectively utilized. To enhance rapport, aides are chosen from the same socio-economic background as the clients they are to serve.

The aides are required to record basic demographic data about the family and survey the food consumption of the homemakers during the previous 24-hour period (hereafter will be referred to as food readings). Such data are collected at 6 months intervals and the progress of the family is evaluated.

Study Methodology

A research study was designed to evaluate the effectiveness of the EFNEP in Ohio. The Cooperative Extension staff provided participating family records from several counties. However, many of the records were unsuitable for analysis which resulted in several counties being eliminated from consideration. This pre-empted the use of random sampling of the state. One county in the Northeastern part of the state had sufficiently complete records for analysis and subsequently was chosen as a case study county. Since the research was confined to only one county which had adequate data, the findings cannot be generalized beyond the group analyzed.

Two time period groups were selected for analysis to determine if any pattern of changed behavior was identifiable among participants in the program. The criteria for inclusion in the study was that the client family must have remained in the program for at least two six-month periods. Since food readings and demographic data provided three time periods for analysis purposes, longitudinal research design was employed and the groups compared. The first group (Group A) began the program in February 1969 with 137 families. At the completion of the third food reading or 12 months later 86 of the original families remained in the program. The second group (Group B) began the program during the late spring and early summer of 1969 with 369 families enrolled. There were 159 families participating in the program at the completion of the third food reading or 12 months later.

The number of subjects drawn from the potential universe consisted of 74 of the total 86 for Group A or the entire group, given the attrition of 12 due to incomplete data. It was deemed desirable to have a comparable size group to which the findings from Group A could be compared, therefore,

a sample of 74 subjects for Group B was taken on systematic random sample basis from the 156 possible families. Characteristics of the samples at the beginning of their participation in the program is presented in Table 1.

Operationalization of Food Consumption Index

It was assumed that nutritionists are correct in the argument that a 2-2-4-4 food grouping constitutes an optimum level of food consumption and should be the norm to be achieved. The 2-2-4-4 is basically the food intake of 2 servings of milk and milk products; 2 servings of meat, poultry, fish and eggs; 4 servings of vegetables and fruits; and 4 servings of breads and cereals.

The participating homemakers were asked to recall what foods and drinks they had consumed in the last 24 hour period and the responses were entered by the aide. The food responses were categorized into the various food groups (2-2-4-4) and the number of servings were summated to provide an indication of food consumption. No quantification of size or servings nor qualitative aspects of the serving (whether a meat serving was bologna or steak) was made in the food reading summary which could effect the usefulness of the data gathering instrument.

It was assumed that representation from each of the food groups was better than concentration in one or two groups. To control for this factor an index was created which gave priority to a more balanced distribution of foods consumed. The index provided for an arbitrary weighting of 1 for each serving from the meat and milk groups and a weight of 0.5 for each serving from the bread and cereal group and from the vegetable and fruit group. The individual's food consumption weights for the 24 hour-time period were summed and multiplied by the number of food groups represented.

Table 1

Characteristics of Sample Populations

Characteristics	Group A		Group B	
Place of Residence	Urban	60.3	Urban	89.0
	Rural Nonfarm	39.7	Rural Nonfarm	11.0
Receive Welfare	Yes	41.1	Yes	34.3
	No	58.9	No	65.7
Receive Food Assistance Other Than Food Stamps	Yes	15.3	Yes	1.5
	No	83.3	No	76.1
	No Response	1.4	No Response	22.4
Use Food From Home Garden	Yes	47.2	Yes	13.4
	No	51.4	No	64.2
	No Response	1.4	No Response	22.4
Home Ownership Status	Own	43.1	Own	44.8
	Rent	56.9	Rent	55.2
Food Shopping Location	Supermarket	91.7	Supermarket	97.0
	Small Local Store	8.3	Small Local Store	3.0
Race	White	4.2	White	3.0
	Negro	95.8	Negro	97.0
Income Level	Less Than $1,000	11.1	Less Than $1,000	4.5
	1,000-1,999	22.2	1,000-1,999	10.4
	2,000-2,999	15.3	2,000-2,999	20.9
	3,000-3,999	16.7	3,000-3,999	16.4
	4,000-4,999	15.3	4,000-4,999	17.9
	5,000-5,999	19.4	5,000-5,999	29.9
Mean Age of Homemaker		45.8		35.9
Mean Size of Family		4.82		4.36

For example, a person having 2 servings of milk (2 points) 1 serving of meat (1 point), 4 servings of vegetables (2 points) and 1 serving of bread (0.5) would be 22 (5.5 x 4 = 22) for the day since four food groups were represented. The maximum possible points in each food group was 2, therefore, a person consuming many servings of one food group could only receive 2 points maximum for the food group. The possible range of index scores was 0 to 32.

Once the scores were computed for the individual homemakers, the scores were grouped into food reading time periods (time 1, time 2 and time 3). The grouped data for both groups (A and B) were evaluated separately in terms of the three time periods. The grouped data were subjected to t-tests for difference between means to determine if significant changes had occurred during participation in the program.

Findings

The data presented in Table 2 demonstrate that considerable change occurred in Group A between time 1 and 3.

Table 2

Food Consumption Index Scores Compared with Time: Group A

	Time 1 Food Reading	Time 2 Food Reading	Time 3 Food Reading
Sample Size	74	74	74
Mean	15.4	20.7	21.7
Standard Deviation	6.7	8.2	8.3

T-tests were computed for the data (Group A) between time 1 and time 2. The t-test value was 4.2 which was significant at the .01 level. The

t-test for the data (Group A) between time 2 and time 3 was 0.7 which was not significant at the .05 level. The t-test between times 1 and 3 was 5.0 which was significant at the .001 level.

The same type of analysis was completed for Group B and the findings are presented in Table 3.

Table 3

Food Consumption Index Scores Compared with Time: Group B

	Time 1 Food Reading	Time 2 Food Reading	Time 3 Food Reading
Sample Size	74	74	74
Mean	20.1	21.2	22.9
Standard Deviation	7.6	8.5	7.6

The t-test between times 1 and 2 food readings for Group B was 0.8 which was not significant at the .05 level. The t-test value between times 2 and 3 was 1.3 which was not significant at the .05 level. The t-test for times 1 and 3 was 2.3 which was significant at the .05 level.

The findings for both groups (A and B) demonstrated that significant positive change occurred between the first food reading and the third. This finding indicates that families in both groups moved toward the food consumption norm of 2-2-4-4 during their participation in the program. It is clear from the data that the EFNEP in this particular study county had a positive impact upon the participating family's food consumption behavior during the 12 month period included in the analysis.

Comparison of Inter-Group Changes for Food Consumption Index Scores

While the previous analysis demonstrated that significant changes occurred during the 12 months of participation in the EFNEP, a further comparison was made between Groups A and B for each time period. Table 1 revealed that Group A differed from Group B on several socio-economic and demographic characteristics which would suggest that their food consumption scores would correspondingly be different. Inspection of Table 1 will show that Group A was more rural nonfarm in residence, had a higher percentage of families on welfare, was older, had larger families and lower incomes than Group B. Table 4 presents the findings for the two separate groups at food reading 1 and reveals that the groups did differ significantly.

Table 4

Comparison of Groups A and B on Food Consumption Index Scores for Time 1 Food Reading

	Group A	Group B	t-test Score
Sample Size	74	74	3.9*
Mean	15.4	20.1	
Standard Deviation	6.7	7.6	

*Significant at the .01 level.

Tables 5 and 6 reveal that the no significant differences were noted between Group A and B for food consumption index scores at time 2 and time 3.

The data relative to the comparison of Groups A and B demonstrate that the EFNEP in the case study county resulted in the relative improvement of the participant families in both groups (A and B). Group B had a significantly higher initial food consumption index score than Group A but the difference was eliminated by the second food reading. This finding suggests that families with relatively low food consumption behavior benefited from the program even more than the group of families having higher initial food consumption index scores. The differential improvement of the two groups is a partial function of Group B having an initially higher consumption index score.

Table 5

Comparison of Groups A and B On Food Consumption Index Scores for Time 2 Food Reading

	Group A	Group B	t-test Score
Sample Size	74	74	0.4*
Mean	20.7	21.2	
Standard Deviation	8.3	8.5	

*Not significant at the .05 level.

Table 6

Comparison of Groups A and B On Food Consumption Index Scores for Time 3 Food Reading

	Group A	Group B	t-test Score
Sample Size	74	74	0.9*
Mean	21.7	22.9	
Standard Deviation	8.3	7.6	

*Not significant at the .05 level.

Regression Analysis

Selected family characteristics were utilized as independent variables and regressed against the difference between food reading 1 and food reading 3 for each family (Food Consumption Index Score Time 3 minus Food Consumption Index Score Time 1). The family characteristics used in the analysis were: family size, educational achievement of the homemaker, number of facilities in the home, and family income. The regression analysis revealed that the independent variables explained about 3 percent of the variance. The extremely low correlations between the independent variables and changes in food consumption patterns strongly suggest that the program had impact upon families with varied characteristics. It was not possible to isolate family characteristics which would be predictive of positive or negative change in terms of food consumption patterns. This suggests that the EFNEP program was appropriate for families with differing family characteristics. This should be extremely encouraging to program developers since families with varied characteristics should benefit from the program.

In summary, the findings of the research demonstrated that participant families in the EFNFP of the Cooperative Extension Service in a case study county in Northeastern Ohio benefited from the program in terms of changes in food consumption as measured in this study. The first six months of the participation in the program (time 1 to time 2) appeared to be the time period for greatest improvement. The progress during the second six months (time 2 to time 3) tended to demonstrate a decreasing rate of increase. The changing rate of improvement suggests that prolonged participation may not result in continued significant improvement and that perhaps participants who achieve a particular level of food consumption should be "graduated" to another pro-

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DEPARTMENT OF AGRICULTURAL ECONOMICS & RURAL SOCIOLOGY
The Ohio State University
2120 Fyffe Road
Columbus, Ohio 43210

gram designed to eliminate other impediments to their effective utilization of existing resources.